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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/320,271 05/27/99 WATANABE

H 990559

023850 MM21/0605
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EXAMINER

LEE, C

ART UNIT

PAPER NUMBER

2825

DATE MAILED:

06/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.
09/320,271

Applicant(s)
H. WATANABE et al.

Examiner
Calvin Lee

Art Unit
2825



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on May 14, 2001 (CPA and Pre Amendment)

2a) ☒ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-13 is/are pending in the application

4a) Of the above, claim(s) _____ is/are withdrawn from consideration

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-13 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirements

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

20) ☐ Other: _____

OFFICE ACTION***Response to Pre Amendment***

1. The amendment of claim 1 in paper 11, filed on May 14, 2001, is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

3. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by *Mizuhara et al.* (US 5,898,221) and/or *Watanabe et al.* (US 6,017,807).

- a) *Mizuhara* discloses a semiconductor device and its method, comprising the steps of:

- forming an organic SOG layer 9 as a first insulator, having substantially uniform thickness, on an oxide film 8 and over a flat substrate's face (Figs. 4-5 and col. 4, lines 25-43)

- introducing impurities B⁺ into the organic SOG layer (so the impurities arrive at the interface between the SOG layer and its underlying oxide), thereby modifying the organic SOG layer 9 to an SOG layer 10 (Fig. 6 and col. 4, lines 45-51)

- embedding and forming a first conductive layer 13 of copper alloy over a contact hole 12 in the modified SOG layer using a mask pattern (Fig. 8 and col. 4, lines 58-67)

The method can extend to have second, third, and fourth interconnections, as desired, by repeating the above steps (col. 5 line 61 through col. 6 line 62).

- b) *Watanabe* teaches a fabrication method of a semiconductor device, comprising the steps:
- forming a first insulating layer 8 of organic SOG, containing 1% of carbon, on an oxide film 5 and overlying a substrate 1 (col. 5 line 17 through col. 6 line 30)
 - introducing impurities into the insulating layer (Fig. 4) so the impurities arrive at the interface between the insulating layer and the oxide film (col. 6, line 39 and col. 7, line 32).
- Note: the implantation at the interface between organic SOG layer 8 and oxide film 5 prevents modified SOG layer 9 (col. 6, line 53) from being easily peeled off from the oxide film (col. 6, lines 52-59 and col. 7, lines 30-37)
- forming a contact hole 10 in the insulation layer using a mask pattern (col. 8 lines 52-63)
 - embedding and forming a first conductive layer 11 over the hole (Fig. 5 and col. 7 lines 9-29)

The method can be repeated to form a conventional multilayer structure having second, third, and fourth interconnections, as required.

Response to Arguments

4. The claim rejections under 35 USC § 103 in the last Office Action have been withdrawn. However, claims 1-13 are now rejected under 35 USC § 102(e), whereas the specific portions of *Mizuhara* and *Watanabe*, relied upon by the Examiner to reject the claims, have been pointed out in details in the new rejections above.

Applicant's argument that "Applicant can be his own lexicographer" is generally correct.

While Applicant may be his own lexicographer, a term "third mask" in a claim may not be used unless first and second masks are previously recited.

In short, Applicant should not use definition in a misleading manner (out of ordinary use).

Conclusion

5. Any inquiry concerning this communication from the Examiner should be directed to *Calvin Lee* at (703) 306-5854 from 7:00AM to 5:00PM (Monday through Thursday). If attempts to reach the examiner by telephone are unsuccessful, Art Unit 2825's Supervisory Patent Examiner *Matthew Smith* whose telephone number is (703) 308-1323.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 or (703) 306-3329.

CL

May 29, 2001



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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